## Technical Memorandum

# Projections of Florida Population by County, 2020-2070 

Prepared for<br>Forecasting and Trends Office<br>Florida Department of Transportation



## Introduction

Long-term population projections are needed to support the statewide transportation planning studies such as the Florida Transportation Plan (FTP) and the Multi-use Corridors of Regional Economic Significance (M-CORES) program. This Technical Memorandum describes the methodology used to develop Florida's population projections for the next 50 years from 2020 to 2070 in five-year increments for all 67 counties and presents the results based on the methodology.

The Bureau of Economic and Business Research (BEBR) at the University of Florida has been making population projections for Florida and its counties since the 1970s. The latest report was published in January 2020 and it contains the most recent set of projections from 2020 to 2045. To account for uncertainty regarding future population growth, BEBR publishes three series of projections: low, medium, and high. The medium series is typically considered more accurate, while the low and high series indicate the uncertainty surrounding the medium series. It should be noted that these projections include only permanent residents. Tourists or seasonal residents are not included.

The methodology used by BEBR to develop 2020-2045 population projections has been used for many years and has proven to be both practical and reliable. The medium series of BEBR projections were adopted for years up to 2045. For years from 2050 to 2070, population projections were developed using the BEBR methodology. However, to ensure that the BEBR methodology was properly applied, a two-step process was followed. The first step was to replicate the BEBR 2020-2045 population projections with the same methodology and data sources. The second step was to extend the population projections an additional 20 years from 2050 to 2070 with necessary adjustments and reasonableness checks. The following sections describe in more detail the two-step process.

## Step 1 - BEBR Methodology and Replicating 2020-2045 Population Projections

## State Projections

The starting point for the state-level projections was the April 1, 2010 census population count by age, sex, race, and Hispanic origin, as adjusted by the National Center for Health Statistics (NCHS) in the Vintage 2017 bridged race population estimates. Projections were made in oneyear intervals using a cohort-component methodology in which births, deaths, and migration are projected separately for each age-sex cohort in Florida for non-Hispanic whites, non-Hispanic nonwhites, and Hispanics.

Three different sets of assumptions are made to provide low, medium, and high series of projections. Although the low and high series do not provide absolute bounds on future population change, they provide a reasonable range in which Florida's future population is likely to fall. The medium projections of total population for 2020-2024 were adjusted to be consistent with the state population forecasts for those years produced by the State of Florida's Demographic Estimating Conference (DEC) held on December 3, 2019. None of the projections after 2024 had any further adjustments.

BEBR indicates that medium series is the most likely to provide accurate forecasts in most circumstances. Therefore, the medium projections of state total population for 2020-2045 were directly used when replicating projections of county population for 2020-2045.

## County Projections

The cohort-component method is appropriate to make population projections at the state level but is not sufficient to make projections at the county level. Many counties in Florida have a population so small that the number of persons in each age-sex category is inadequate for making reliable cohort-component projections, given the lack of detailed small-area data. In addition, county growth patterns are often volatile that a single technique based on data from a single time period may produce misleading results. As a result, BEBR recommends using several different techniques and historical base periods to project total populations at the county level.

BEBR started with the population estimates constructed for April 1, 2019, and made projections for each county using the following five (5) different techniques:

- Linear - the population will change by the same number of persons in each future year as the average annual change during the base period.
- Exponential - the population will change at the same percentage rate in each future year as the average annual rate during the base period.
- Share-of-growth - each county's share of state population growth in the future will be the same as its share during the base period.
- Shift-share - each county's share of the state population will change by the same annual amount in the future as the average annual change during the base period.
- Constant-share - each county's share of the state population will remain constant at its 2019 level.

For the linear and share-of-growth techniques, BEBR used base periods of two, ten, and twenty years (2017-2019, 2009-2019, and 1999-2019), yielding three sets of projections for each
technique. For the exponential and shift-share techniques, BEBR used base periods of five and fifteen years (2014-2019 and 2004-2019), yielding two sets of projections for each technique. The constant-share method was based on data for a single year (2019). Table 1 shows a summary of the techniques used, the corresponding base period(s), and the number of population projections created for each county for each projection year.

Table 1 Population Projection Techniques and Base Periods

| Technique | Base Period | Number of Projections |
| :--- | :--- | :---: |
| Linear | 2017-2019 (two-year period) <br> 2009-2019 (ten-year period) <br> 1999-2019 (twenty-year period) | 3 |
| Exponential | $2014-2019$ (five-year period) <br> $2004-2019$ (fifteen-year period) | 2 |
| Share-of-growth | 2017-2019 (two-year period) <br> 2009-2019 (ten-year period) <br> $1999-2019 ~(t w e n t y-y e a r ~ p e r i o d) ~$ | 3 |
| Shift-share | $2014-2019$ (five-year period) <br> $2004-2019$ (fifteen-year period) | 2 |
| Constant share | 2019 (a single year) | 1 |

BEBR's methodology produced eleven projections for each county for each projection year (2020, 2025, 2030, 2035, 2040 and 2045). From these, five averages were calculated: one using all eleven projections (AVE-11), one that excluded the highest and lowest projections (AVE-9), one that excluded the two highest and two lowest projections (AVE-7), one that excluded the three highest and three lowest projections (AVE-5), and one that excluded the four highest and four lowest projections (AVE-3).

BEBR selected AVE-5 for 66 counties, the average in which the three highest and three lowest projections were excluded. For Monroe County, BEBR selected an average of projections made with the exponential technique with a base period of five years and the linear technique with a base period of two years.

In addition, BEBR made manual adjustments to the projections in six counties in the Florida Panhandle to account for estimated population losses or slowdowns in growth due to the impacts of Hurricane Michael (Bay, Calhoun, Gadsden, Gulf, Jackson, and Liberty counties). Manual adjustments were also made in 31 counties to account for changes in institutional populations such as university students and prison inmates. Moreover, the sum of county projections equals the state projection for each year, which indicates additional adjustments.

Because no detailed information about the BEBR manual adjustments was available, no manual adjustments were made to the initial projections. Then the differences between initial projections and the BEBR projections were examined, which can reflect the manual adjustments made by BEBR. In general, the differences between initial and corresponding BEBR projections for a given county increase as the projection year increases and the maximum percentage differences for all counties fall in the year 2045. For counties that are in the adjustment list in BEBR report, if the maximum percentage difference is over $5 \%$, a regression model was used to estimate manual adjustments made by BEBR (hereafter referred to as Type 1 adjustments). For instance, Bay County's 2019 population estimate is heavily impacted by Hurricane Michael. Therefore, the initial
projection based on the 2019 population estimate is much lower than BEBR's projection with a maximum percentage difference of $20 \%$. Type 1 adjustments were made for 18 counties.

Table 2 presents population projections with Type 1 adjustments for 2020-2045. Table 3 shows the percent differences between BEBR's projections and the projections in Table 2. In most cases, the differences between the two sets are below $3.0 \%$, which indicates that our method can replicate the original BEBR population projections reasonably well and can be extended to develop future projections from 2050 to 2070 that are consistent with the 2020-2045 projections.

Table 2 Projections of Florida Population by County, 2020-2045
Population Projections (After Type 1 Adjustments)

| County | $\mathbf{2 0 2 0}$ |  | $\mathbf{2 0 2 5}$ | $\mathbf{2 0 3 0}$ | $\mathbf{2 0 3 5}$ | $\mathbf{2 0 4 0}$ |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Alachua* $^{\text {Baker* }}$ | 269,600 | 281,800 | 291,700 | 300,000 | 307,200 | 313,500 |
| Bay* $^{*}$ | 28,500 | 29,900 | 31,000 | 32,100 | 32,900 | 33,600 |
| Bradford* $^{\text {Brevard }}$ | 175,400 | 185,500 | 193,600 | 200,400 | 206,200 | 210,800 |
| Broward | 28,800 | 29,200 | 29,500 | 29,800 | 30,100 | 30,300 |
| Calhoun* | $1,942,000$ | $2,039,000$ | $2,122,200$ | $2,198,600$ | $2,273,200$ | $2,347,800$ |
| Charlotte | 184,900 | 15,400 | 15,800 | 16,200 | 16,500 | 16,800 |
| Citrus | 149,400 | 156,700 | 209,000 | 219,600 | 230,400 | 241,000 |
| Clay | 218,900 | 236,700 | 253,600 | 169,600 | 175,200 | 180,600 |
| Collier | 384,900 | 421,500 | 454,800 | 485,900 | 513,300 | 540,500 |
| Columbia* | 70,500 | 73,500 | 76,000 | 78,000 | 79,700 | 81,200 |
| DeSoto | 36,300 | 37,300 | 38,200 | 38,900 | 39,700 | 40,500 |
| Dixie* | 16,700 | 16,900 | 17,000 | 17,100 | 17,100 | 17,100 |
| Duval | 986,100 | $1,051,700$ | $1,107,500$ | $1,160,400$ | $1,208,600$ | $1,254,100$ |
| Escambia | 324,300 | 336,300 | 346,400 | 355,000 | 362,600 | 371,000 |
| Flagler | 113,300 | 126,500 | 139,400 | 151,200 | 162,800 | 174,000 |
| Franklin* | 12,200 | 12,500 | 12,800 | 13,000 | 13,300 | 13,400 |
| Gadsden* | 46,400 | 46,900 | 47,100 | 47,300 | 47,300 | 47,400 |
| Gilchrist | 18,000 | 18,900 | 19,800 | 20,500 | 21,200 | 21,900 |
| Glades | 13,200 | 13,500 | 13,800 | 14,000 | 14,200 | 14,400 |
| Gulf* | 14,900 | 15,200 | 15,600 | 15,900 | 16,300 | 16,800 |
| Hamilton | 14,600 | 14,700 | 14,600 | 14,600 | 14,600 | 14,600 |
| Hardee | 27,400 | 27,300 | 27,200 | 27,100 | 27,100 | 27,000 |
| Hendry | 40,500 | 42,000 | 43,200 | 44,100 | 45,000 | 45,800 |
| Hernando | 191,400 | 206,100 | 219,500 | 231,400 | 241,900 | 251,800 |
| Highlands | 104,200 | 107,700 | 110,800 | 113,400 | 115,700 | 118,200 |
| Hillsborough | $1,475,300$ | $1,614,100$ | $1,739,300$ | $1,843,000$ | $1,945,200$ | $2,048,100$ |
| Holmes | 20,100 | 20,100 | 20,100 | 20,000 | 19,900 | 19,900 |

Population Projections (After Type 1 Adjustments)

| County | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Indian River | 157,700 | 169,800 | 180,800 | 190,400 | 199,100 | 207,300 |
| Jackson* | 47,100 | 47,600 | 47,800 | 48,000 | 48,100 | 48,300 |
| Jefferson | 14,800 | 15,100 | 15,300 | 15,500 | 15,600 | 15,800 |
| Lafayette* | 8,700 | 9,100 | 9,400 | 9,700 | 9,900 | 10,100 |
| Lake | 366,600 | 410,100 | 452,700 | 492,200 | 528,000 | 563,400 |
| Lee | 752,800 | 837,000 | 911,800 | 980,300 | 1,044,800 | 1,109,600 |
| Leon | 300,000 | 315,200 | 329,400 | 342,400 | 354,700 | 367,200 |
| Levy | 41,600 | 42,600 | 43,600 | 44,400 | 45,100 | 45,700 |
| Liberty | 8,800 | 9,200 | 9,500 | 9,700 | 10,000 | 10,200 |
| Madison | 19,600 | 19,800 | 20,000 | 20,200 | 20,400 | 20,600 |
| Manatee | 396,100 | 434,300 | 469,000 | 502,100 | 535,100 | 568,300 |
| Marion | 365,800 | 392,000 | 416,400 | 437,600 | 457,100 | 474,700 |
| Martin | 160,700 | 169,600 | 177,700 | 184,800 | 192,000 | 199,100 |
| Miami-Dade | 2,851,700 | 3,026,900 | 3,185,800 | 3,339,800 | 3,484,200 | 3,616,800 |
| Monroe | 76,300 | 76,600 | 77,000 | 77,400 | 77,800 | 78,300 |
| Nassau | 87,000 | 95,900 | 104,200 | 111,600 | 118,400 | 124,900 |
| Okaloosa | 204,000 | 214,200 | 223,900 | 232,700 | 241,200 | 249,500 |
| Okeechobee | 42,100 | 43,600 | 44,800 | 45,800 | 47,000 | 48,000 |
| Orange | 1,419,700 | 1,575,300 | 1,714,700 | 1,835,200 | 1,953,900 | 2,074,200 |
| Osceola | 385,200 | 453,200 | 517,300 | 574,400 | 631,100 | 689,500 |
| Palm Beach | 1,466,000 | 1,548,200 | 1,623,500 | 1,694,600 | 1,763,800 | 1,826,900 |
| Pasco | 537,200 | 586,100 | 630,000 | 668,700 | 704,500 | 738,500 |
| Pinellas | 985,500 | 1,013,500 | 1,036,700 | 1,055,300 | 1,074,200 | 1,093,800 |
| Polk | 704,300 | 766,900 | 823,100 | 873,000 | 919,200 | 963,200 |
| Putnam | 73,400 | 73,400 | 73,100 | 73,100 | 73,000 | 73,000 |
| St. Johns | 264,000 | 309,900 | 352,600 | 390,300 | 427,600 | 466,400 |
| St. Lucie | 315,100 | 343,000 | 369,800 | 394,300 | 416,600 | 437,900 |
| Santa Rosa* | 183,000 | 199,300 | 213,400 | 225,200 | 235,300 | 244,100 |
| Sarasota | 433,500 | 464,100 | 490,600 | 516,200 | 541,900 | 567,400 |
| Seminole | 478,800 | 510,200 | 536,500 | 561,600 | 585,500 | 607,300 |
| Sumter* | 132,700 | 152,000 | 169,800 | 186,500 | 199,800 | 211,000 |
| Suwannee* | 45,900 | 48,300 | 50,400 | 52,100 | 53,500 | 54,700 |
| Taylor | 22,500 | 23,100 | 23,500 | 23,800 | 24,100 | 24,400 |
| Union | 15,500 | 15,700 | 15,900 | 15,900 | 15,900 | 15,900 |
| Volusia | 545,300 | 572,300 | 595,400 | 617,500 | 638,400 | 658,500 |
| Wakulla* | 33,300 | 35,400 | 37,100 | 38,600 | 39,600 | 40,600 |
| Walton* | 72,100 | 81,500 | 89,600 | 96,200 | 102,300 | 107,700 |
| Washington* | 25,200 | 25,900 | 26,500 | 27,000 | 27,300 | 27,700 |

* Type 1 adjustments were made to this county's projections.

Table 3 Percent Errors of Florida Population by County, 2020-2045
Percent Errors (Compared with BEBR Projections)

| County | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Alachua* | -0.1\% | 0.1\% | 0.0\% | -0.1\% | -0.1\% | 0.1\% |
| Baker* | 0.0\% | 0.0\% | -0.3\% | 0.3\% | 0.0\% | 0.0\% |
| Bay* | 0.1\% | -0.1\% | -0.1\% | 0.0\% | 0.1\% | 0.0\% |
| Bradford* | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.3\% | 0.0\% |
| Brevard | 0.0\% | -0.1\% | 0.3\% | 0.9\% | 1.8\% | 2.8\% |
| Broward | 0.0\% | 0.0\% | 0.3\% | 0.9\% | 1.8\% | 2.7\% |
| Calhoun* | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% |
| Charlotte | 0.1\% | -0.4\% | 0.1\% | 1.0\% | 2.3\% | 3.7\% |
| Citrus | 0.0\% | -0.3\% | 0.0\% | 0.4\% | 1.0\% | 1.9\% |
| Clay | 0.0\% | 0.0\% | 0.4\% | 1.2\% | 2.3\% | 3.6\% |
| Collier | 0.1\% | 0.1\% | 0.7\% | 1.8\% | 3.0\% | 4.5\% |
| Columbia* | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% |
| DeSoto | 0.0\% | -0.5\% | -0.3\% | 0.0\% | 0.5\% | 1.5\% |
| Dixie* | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% |
| Duval | 0.1\% | 0.0\% | 0.3\% | 1.0\% | 2.0\% | 3.1\% |
| Escambia | 0.1\% | 0.0\% | 0.2\% | 0.6\% | 0.9\% | 1.6\% |
| Flagler | -0.1\% | 0.0\% | 0.8\% | 1.9\% | 3.5\% | 5.3\% |
| Franklin* | 0.0\% | 0.0\% | 0.0\% | -0.8\% | 0.8\% | 0.0\% |
| Gadsden* | 0.2\% | -0.2\% | 0.0\% | 0.2\% | 0.0\% | 0.0\% |
| Gilchrist | 0.0\% | 0.0\% | 0.5\% | 0.5\% | 1.4\% | 2.3\% |
| Glades | 0.0\% | 0.0\% | 0.7\% | 0.7\% | 0.7\% | 1.4\% |
| Gulf* | 1.4\% | -0.7\% | -0.6\% | -0.6\% | -0.6\% | 1.2\% |
| Hamilton | 0.0\% | -0.7\% | -2.0\% | -2.0\% | -2.0\% | -2.7\% |
| Hardee | -0.7\% | -1.1\% | -1.8\% | -2.5\% | -2.5\% | -3.2\% |
| Hendry | 0.0\% | -0.5\% | -0.7\% | -0.9\% | -1.1\% | -1.3\% |
| Hernando | -0.1\% | 0.0\% | 0.3\% | 1.1\% | 2.0\% | 3.0\% |
| Highlands | 0.0\% | -0.1\% | 0.0\% | 0.2\% | 0.4\% | 0.9\% |
| Hillsborough | 0.1\% | 0.2\% | 1.0\% | 1.9\% | 3.0\% | 4.5\% |
| Holmes | -0.5\% | -1.0\% | -1.5\% | -2.0\% | -2.9\% | -2.9\% |
| Indian River | 0.1\% | -0.1\% | 0.3\% | 1.2\% | 2.1\% | 3.2\% |
| Jackson* | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% |
| Jefferson | 0.0\% | 0.0\% | 0.0\% | 0.6\% | 0.0\% | 0.6\% |
| Lafayette* | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% | 0.0\% |
| Lake | 0.0\% | -0.2\% | 0.5\% | 2.0\% | 3.5\% | 5.3\% |
| Lee | 0.0\% | 0.2\% | 0.8\% | 2.0\% | 3.4\% | 5.0\% |
| Leon | 0.1\% | 0.1\% | 0.6\% | 1.4\% | 2.5\% | 3.8\% |
| Levy | 0.0\% | -0.2\% | 0.0\% | 0.2\% | 0.4\% | 0.4\% |
| Liberty | 0.0\% | 1.1\% | 1.1\% | 1.0\% | 1.0\% | 1.0\% |
| Madison | 2.1\% | 1.5\% | 1.5\% | 2.0\% | 2.0\% | 2.5\% |
| Manatee | 0.1\% | -0.1\% | 0.5\% | 1.7\% | 3.1\% | 4.8\% |

Percent Errors (Compared with BEBR Projections)

| County | $\mathbf{2 0 2 0}$ | $\mathbf{2 0 2 5}$ | $\mathbf{2 0 3 0}$ | $\mathbf{2 0 3 5}$ | $\mathbf{2 0 4 0}$ | $\mathbf{2 0 4 5}$ |
| :--- | ---: | ---: | ---: | ---: | ---: | ---: |
| Marion | $0.0 \%$ | $0.0 \%$ | $0.4 \%$ | $1.1 \%$ | $2.1 \%$ | $3.0 \%$ |
| Martin | $0.1 \%$ | $0.1 \%$ | $0.5 \%$ | $1.0 \%$ | $2.0 \%$ | $3.2 \%$ |
| Miami-Dade | $0.1 \%$ | $0.1 \%$ | $0.6 \%$ | $1.4 \%$ | $2.5 \%$ | $3.6 \%$ |
| Monroe | $0.0 \%$ | $0.1 \%$ | $0.3 \%$ | $0.4 \%$ | $0.5 \%$ | $0.8 \%$ |
| Nassau | $0.1 \%$ | $0.1 \%$ | $1.1 \%$ | $2.3 \%$ | $3.6 \%$ | $5.0 \%$ |
| Okaloosa | $0.1 \%$ | $0.0 \%$ | $0.3 \%$ | $1.0 \%$ | $1.9 \%$ | $3.0 \%$ |
| Okeechobee | $0.0 \%$ | $0.5 \%$ | $0.9 \%$ | $1.1 \%$ | $2.2 \%$ | $2.8 \%$ |
| Orange | $0.1 \%$ | $0.1 \%$ | $1.1 \%$ | $2.1 \%$ | $3.5 \%$ | $5.2 \%$ |
| Osceola | $0.1 \%$ | $0.2 \%$ | $1.4 \%$ | $2.8 \%$ | $4.8 \%$ | $7.3 \%$ |
| Palm Beach | $0.0 \%$ | $0.1 \%$ | $0.4 \%$ | $1.1 \%$ | $2.0 \%$ | $2.9 \%$ |
| Pasco | $0.0 \%$ | $0.0 \%$ | $0.5 \%$ | $1.4 \%$ | $2.6 \%$ | $3.9 \%$ |
| Pinellas | $0.1 \%$ | $-0.1 \%$ | $0.1 \%$ | $0.4 \%$ | $0.7 \%$ | $1.2 \%$ |
| Polk | $0.0 \%$ | $0.1 \%$ | $0.7 \%$ | $1.7 \%$ | $2.9 \%$ | $4.2 \%$ |
| Putnam | $0.1 \%$ | $-0.3 \%$ | $-0.8 \%$ | $-1.1 \%$ | $-1.5 \%$ | $-1.7 \%$ |
| St. Johns | $0.0 \%$ | $0.2 \%$ | $1.4 \%$ | $2.9 \%$ | $4.8 \%$ | $7.2 \%$ |
| St. Lucie | $0.0 \%$ | $0.0 \%$ | $0.6 \%$ | $1.8 \%$ | $3.0 \%$ | $4.4 \%$ |
| Santa Rosa* | $0.1 \%$ | $-0.2 \%$ | $0.0 \%$ | $0.0 \%$ | $0.1 \%$ | $0.0 \%$ |
| Sarasota | $0.0 \%$ | $-0.2 \%$ | $0.2 \%$ | $1.1 \%$ | $2.4 \%$ | $3.8 \%$ |
| Seminole | $0.0 \%$ | $-0.1 \%$ | $0.2 \%$ | $0.8 \%$ | $1.9 \%$ | $2.9 \%$ |
| Sumter* | $0.3 \%$ | $-0.2 \%$ | $-0.6 \%$ | $0.4 \%$ | $0.4 \%$ | $-0.2 \%$ |
| Suwannee* | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ |
| Taylor | $-0.4 \%$ | $-0.4 \%$ | $-0.4 \%$ | $-0.8 \%$ | $-0.8 \%$ | $-1.2 \%$ |
| Union | $0.0 \%$ | $0.6 \%$ | $1.9 \%$ | $1.3 \%$ | $1.3 \%$ | $1.3 \%$ |
| Volusia | $0.0 \%$ | $-0.3 \%$ | $-0.1 \%$ | $0.6 \%$ | $1.4 \%$ | $2.1 \%$ |
| Wakulla* | $0.0 \%$ | $0.0 \%$ | $-0.3 \%$ | $0.3 \%$ | $0.0 \%$ | $0.0 \%$ |
| Walton* | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.1 \%$ | $0.0 \%$ |
| Washington* | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ | $0.0 \%$ |

* Type 1 adjustments were made to this county's projections.


## Step 2 - Projections of Florida 2050-2070 Population by County

## State Projections

Although the cohort-component method is a better way to make population projections at the state level, the information needed to apply the method such as birth rates, death rates, and migration rates for the distant future years from 2050 to 2070 is limited. A simplified method was used to develop state projections. Three different techniques were explored:

- Linear - the population will change by the same number of persons in each future year as the average annual change during the base period.
- Exponential - the population will change at the same percentage rate in each future year as the average annual rate during the base period.
- Logarithmic - the population will rapidly increase in size until it reaches a certain point, called the carrying capacity. At this point, the resources are not enough to support the population.

For all three techniques, the base periods of forty-seven years (1999-2045) were used to develop the state-level projections. The population data for 1999-2019 in one-year increments were obtained from the annual release of Florida Estimates of Population Report by BEBR, while the population data for 2020 - 2045 in five-year increments were obtained from the BEBR Projections of Florida Population by County published in January 2020. As mentioned earlier, the medium projections were used as recommended by BEBR.

This method produced three projections for each projection year (Table 4). All three projection methods produced high R -squared values. The linear technique produced the most reasonable state-level projections compared to historical trends, and, therefore, linear projection results were used as the basis for county-level population projections.

Table 4 State Projections by Projection Technique, 2050-2070

| Projection <br> Technique | $\mathbf{2 0 5 0}$ | $\mathbf{2 0 5 5}$ | $\mathbf{2 0 6 0}$ | $\mathbf{2 0 6 5}$ | $\mathbf{2 0 7 0}$ | $\mathbf{R}^{\mathbf{2}}$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: |
| Linear | $29,108,600$ | $30,397,600$ | $31,686,600$ | $32,975,600$ | $34,264,600$ | 0.99 |
| Exponential | $26,782,800$ | $28,481,700$ | $30,288,300$ | $32,209,500$ | $34,252,600$ | 0.98 |
| Logarithmic | $29,064,500$ | $30,333,300$ | $31,599,000$ | $32,861,700$ | $34,121,300$ | 0.99 |

## County Projections

The county-level population projections for 2050-2070 followed the same methodology as described in the Step 1 section. Five (5) techniques (Linear, Exponential, Share-of-growth, and Constant Share) were used to produce eleven projections. Five (5) averages (AVE-11, AVE-9, AVE-7, AVE-5, and AVE-3) were calculated and different averages were used for different counties. Type 1 adjustments were applied for the same 18 counties as shown in Table 3. After applying Type 1 adjustments, the difference between the sum of all county projections and the state projection for each projection year was allocated to counties that did not receive Type 1 adjustments (hereafter referred to as Type 2 adjustments). Type 2 adjustments were allocated in proportion to the difference between the county's unadjusted projection and BEBR projection for projection year 2045. Finally, minor adjustments were made to eight (8) counties (Dixie, Gadsden, Hardee, Hamilton, Holmes, Jackson, Union, and Volusia)
whose projections were not consistent with their historical growth patterns prior to 2019 or BEBR's projected growth trends between 2020 and 2045. Like BEBR projections, the sum of FDOT county projections for each projection year equals the corresponding state projections (except for slight differences due to rounding). The final projected population by county for 2050-2070 is presented in Table 5 together with the BEBR projected populations for 2020-2045.

Table 5 Projections of Florida Population by County (2020-2070 with Estimates for 2019)

| County | Census | Estimates (BEBR) | Projections (BEBR) |  |  |  |  |  | Projections (FDOT) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  | 2010 | 2019 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 | 2065 | 2070 |
| Alachua | 247,336 | 267,306 | 269,800 | 281,500 | 291,600 | 300,200 | 307,400 | 313,300 | 322,000 | 330,000 | 337,700 | 345,000 | 351,900 |
| Baker | 27,115 | 28,249 | 28,500 | 29,900 | 31,100 | 32,000 | 32,900 | 33,600 | 34,600 | 35,600 | 36,500 | 37,400 | 38,200 |
| Bay | 168,852 | 167,283 | 175,300 | 185,700 | 193,700 | 200,300 | 206,000 | 210,900 | 215,000 | 218,300 | 220,600 | 222,000 | 223,400 |
| Bradford | 28,520 | 28,682 | 28,800 | 29,200 | 29,500 | 29,800 | 30,000 | 30,300 | 30,700 | 31,000 | 31,400 | 31,700 | 32,100 |
| Brevard | 543,376 | 594,469 | 602,400 | 637,600 | 665,000 | 687,900 | 707,400 | 726,000 | 766,500 | 794,000 | 821,300 | 848,700 | 875,900 |
| Broward | 1,748,066 | 1,919,644 | 1,941,200 | 2,039,000 | 2,115,200 | 2,179,100 | 2,233,900 | 2,285,100 | 2,402,300 | 2,480,600 | 2,559,200 | 2,638,200 | 2,717,000 |
| Calhoun | 14,625 | 14,067 | 14,900 | 15,400 | 15,800 | 16,200 | 16,500 | 16,800 | 17,200 | 17,500 | 17,800 | 18,100 | 18,400 |
| Charlotte | 159,978 | 181,770 | 184,700 | 198,100 | 208,700 | 217,400 | 225,200 | 232,500 | 246,700 | 257,400 | 268,300 | 279,500 | 290,900 |
| Citrus | 141,236 | 147,744 | 149,400 | 157,100 | 163,600 | 168,900 | 173,400 | 177,300 | 185,600 | 191,800 | 197,900 | 203,800 | 209,600 |
| Clay | 190,865 | 215,246 | 219,000 | 236,800 | 252,500 | 265,000 | 275,600 | 285,100 | 304,700 | 318,900 | 333,000 | 347,100 | 361,300 |
| Collier | 321,520 | 376,706 | 384,600 | 421,200 | 451,700 | 477,200 | 498,400 | 517,400 | 561,300 | 591,800 | 622,300 | 653,100 | 683,700 |
| Columbia | 67,531 | 70,492 | 70,500 | 73,500 | 76,000 | 78,000 | 79,700 | 81,200 | 83,200 | 85,100 | 87,000 | 88,600 | 90,200 |
| DeSoto | 34,862 | 36,065 | 36,300 | 37,500 | 38,300 | 38,900 | 39,500 | 39,900 | 41,100 | 41,900 | 42,700 | 43,500 | 44,300 |
| Dixie | 16,422 | 16,610 | 16,700 | 16,900 | 17,000 | 17,100 | 17,100 | 17,100 | 17,200 | 17,200 | 17,300 | 17,400 | 17,500 |
| Duval | 864,263 | 970,672 | 985,500 | 1,051,900 | 1,104,300 | 1,148,700 | 1,185,300 | 1,216,200 | 1,292,000 | 1,344,100 | 1,396,100 | 1,447,900 | 1,499,200 |
| Escambia | 297,619 | 321,134 | 324,000 | 336,400 | 345,800 | 353,000 | 359,300 | 365,200 | 378,200 | 387,400 | 396,700 | 406,000 | 415,300 |
| Flagler | 95,696 | 110,635 | 113,400 | 126,500 | 138,300 | 148,400 | 157,300 | 165,200 | 182,300 | 193,900 | 205,600 | 217,300 | 228,900 |
| Franklin | 11,549 | 12,273 | 12,200 | 12,500 | 12,800 | 13,100 | 13,200 | 13,400 | 13,600 | 13,800 | 14,100 | 14,400 | 14,600 |
| Gadsden | 46,389 | 46,277 | 46,300 | 47,000 | 47,100 | 47,200 | 47,300 | 47,400 | 47,400 | 47,500 | 47,600 | 47,600 | 47,600 |
| Gilchrist | 16,939 | 17,766 | 18,000 | 18,900 | 19,700 | 20,400 | 20,900 | 21,400 | 22,500 | 23,300 | 24,100 | 24,900 | 25,700 |
| Glades | 12,884 | 13,121 | 13,200 | 13,500 | 13,700 | 13,900 | 14,100 | 14,200 | 14,500 | 14,800 | 14,900 | 15,100 | 15,400 |
| Gulf | 15,863 | 13,082 | 14,700 | 15,300 | 15,700 | 16,000 | 16,400 | 16,600 | 17,100 | 17,600 | 17,900 | 18,300 | 18,600 |
| Hamilton | 14,799 | 14,600 | 14,600 | 14,800 | 14,900 | 14,900 | 14,900 | 15,000 | 15,000 | 15,100 | 15,100 | 15,200 | 15,200 |
| Hardee | 27,731 | 27,385 | 27,600 | 27,600 | 27,700 | 27,800 | 27,800 | 27,900 | 27,900 | 27,900 | 28,000 | 28,100 | 28,100 |
| Hendry | 39,140 | 40,120 | 40,500 | 42,200 | 43,500 | 44,500 | 45,500 | 46,400 | 47,200 | 48,400 | 49,600 | 50,700 | 51,900 |
| Hernando | 172,778 | 188,358 | 191,500 | 206,100 | 218,900 | 228,900 | 237,200 | 244,400 | 261,200 | 273,300 | 285,400 | 297,500 | 309,700 |
| Highlands | 98,786 | 103,434 | 104,200 | 107,800 | 110,800 | 113,200 | 115,200 | 117,100 | 120,600 | 123,600 | 126,500 | 129,400 | 132,400 |
| Hillsborough | 1,229,226 | 1,444,870 | 1,474,300 | 1,611,300 | 1,721,600 | 1,809,000 | 1,887,700 | 1,959,200 | 2,127,300 | 2,240,800 | 2,355,300 | 2,470,900 | 2,586,400 |
| Holmes | 19,927 | 20,049 | 20,200 | 20,300 | 20,400 | 20,400 | 20,500 | 20,500 | 20,600 | 20,600 | 20,600 | 20,700 | 20,700 |
| Indian River | 138,028 | 154,939 | 157,600 | 170,000 | 180,200 | 188,200 | 195,000 | 200,900 | 215,000 | 224,900 | 235,000 | 245,100 | 255,200 |
| Jackson | 49,746 | 46,969 | 47,100 | 47,600 | 47,800 | 48,000 | 48,100 | 48,300 | 48,400 | 48,500 | 48,600 | 48,700 | 48,800 |
| Jefferson | 14,761 | 14,776 | 14,800 | 15,100 | 15,300 | 15,400 | 15,600 | 15,700 | 15,900 | 16,100 | 16,400 | 16,600 | 16,800 |
| Lafayette | 8,870 | 8,482 | 8,700 | 9,100 | 9,400 | 9,700 | 9,900 | 10,100 | 10,400 | 10,600 | 10,800 | 10,900 | 11,100 |
| Lake | 297,052 | 357,247 | 366,600 | 410,900 | 450,300 | 482,700 | 510,300 | 534,800 | 592,500 | 633,000 | 674,300 | 716,700 | 759,500 |
| Lee | 618,754 | 735,148 | 752,800 | 835,500 | 904,700 | 961,400 | 1,010,900 | 1,056,600 | 1,161,200 | 1,233,700 | 1,305,600 | 1,375,900 | 1,446,000 |
| Leon | 275,487 | 296,499 | 299,800 | 314,900 | 327,500 | 337,800 | 346,200 | 353,700 | 374,100 | 386,700 | 399,300 | 412,100 | 424,700 |


|  | Census | Estimates (BEBR) | Projections (BEBR) |  |  |  |  |  | Projections (FDOT) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| County | 2010 | 2019 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 | 2065 | 2070 |
| Levy | 40,801 | 41,330 | 41,600 | 42,700 | 43,600 | 44,300 | 44,900 | 45,500 | 46,400 | 47,200 | 47,900 | 48,700 | 49,600 |
| Liberty | 8,365 | 8,772 | 8,800 | 9,100 | 9,400 | 9,600 | 9,900 | 10,100 | 10,400 | 10,700 | 10,900 | 11,200 | 11,500 |
| Madison | 19,224 | 19,570 | 19,200 | 19,500 | 19,700 | 19,800 | 20,000 | 20,100 | 20,400 | 20,600 | 20,700 | 20,800 | 20,900 |
| Manatee | 322,833 | 387,414 | 395,800 | 434,600 | 466,500 | 493,800 | 519,200 | 542,200 | 592,900 | 626,500 | 659,800 | 693,000 | 726,200 |
| Marion | 331,298 | 360,421 | 365,900 | 392,100 | 414,800 | 432,800 | 447,900 | 460,800 | 491,100 | 512,700 | 534,300 | 555,900 | 577,300 |
| Martin | 146,318 | 158,598 | 160,600 | 169,500 | 176,900 | 182,900 | 188,200 | 193,000 | 204,200 | 211,700 | 219,300 | 226,900 | 234,600 |
| Miami-Dade | 2,496,435 | 2,812,130 | 2,849,900 | 3,022,600 | 3,167,900 | 3,294,700 | 3,399,200 | 3,489,900 | 3,714,000 | 3,858,100 | 4,001,700 | 4,144,500 | 4,284,300 |
| Monroe | 73,090 | 76,212 | 76,300 | 76,500 | 76,800 | 77,100 | 77,400 | 77,700 | 78,600 | 79,000 | 79,500 | 80,100 | 80,700 |
| Nassau | 73,314 | 85,070 | 86,900 | 95,800 | 103,100 | 109,100 | 114,300 | 118,900 | 129,900 | 137,400 | 145,000 | 152,600 | 160,300 |
| Okaloosa | 180,822 | 201,514 | 203,800 | 214,300 | 223,300 | 230,400 | 236,600 | 242,300 | 254,900 | 263,600 | 272,300 | 281,000 | 289,700 |
| Okeechobee | 39,996 | 41,808 | 42,100 | 43,400 | 44,400 | 45,300 | 46,000 | 46,700 | 48,400 | 49,400 | 50,500 | 51,500 | 52,600 |
| Orange | 1,145,956 | 1,386,080 | 1,418,900 | 1,573,000 | 1,696,800 | 1,797,400 | 1,888,700 | 1,972,200 | 2,165,600 | 2,293,700 | 2,423,300 | 2,554,300 | 2,686,500 |
| Osceola | 268,685 | 370,552 | 384,800 | 452,100 | 510,200 | 558,900 | 602,200 | 642,600 | 709,400 | 768,000 | 827,900 | 888,800 | 950,600 |
| Palm Beach | 1,320,134 | 1,447,857 | 1,465,800 | 1,547,200 | 1,616,500 | 1,676,600 | 1,729,500 | 1,775,200 | 1,876,000 | 1,945,500 | 2,014,600 | 2,083,600 | 2,151,800 |
| Pasco | 464,697 | 527,122 | 537,300 | 586,100 | 626,800 | 659,200 | 686,700 | 711,000 | 767,800 | 808,800 | 848,700 | 888,700 | 928,500 |
| Pinellas | 916,542 | 978,045 | 984,900 | 1,014,400 | 1,035,600 | 1,051,300 | 1,066,600 | 1,080,600 | 1,109,600 | 1,131,500 | 1,153,500 | 1,175,400 | 1,197,300 |
| Polk | 602,095 | 690,606 | 704,100 | 766,400 | 817,000 | 858,000 | 893,100 | 924,700 | 997,100 | 1,048,100 | 1,099,400 | 1,151,000 | 1,202,400 |
| Putnam | 74,364 | 73,268 | 73,300 | 73,600 | 73,700 | 73,900 | 74,100 | 74,300 | 74,400 | 74,700 | 75,000 | 75,200 | 75,500 |
| St. Johns | 190,039 | 254,412 | 263,900 | 309,300 | 347,600 | 379,400 | 408,100 | 434,900 | 487,900 | 528,300 | 569,400 | 611,400 | 653,900 |
| St. Lucie | 277,789 | 309,359 | 315,200 | 342,900 | 367,500 | 387,400 | 404,400 | 419,400 | 454,300 | 477,600 | 500,800 | 524,000 | 546,800 |
| Santa Rosa | 151,372 | 179,054 | 182,800 | 199,600 | 213,400 | 225,100 | 235,100 | 244,200 | 256,300 | 268,200 | 279,900 | 291,100 | 302,100 |
| Sarasota | 379,448 | 426,275 | 433,300 | 464,900 | 489,600 | 510,500 | 529,400 | 546,500 | 585,700 | 611,700 | 637,600 | 663,600 | 689,500 |
| Seminole | 422,718 | 471,735 | 478,800 | 510,700 | 535,600 | 556,900 | 574,700 | 590,400 | 625,900 | 650,900 | 675,700 | 700,500 | 725,000 |
| Sumter | 93,420 | 128,633 | 132,300 | 152,300 | 170,800 | 185,700 | 199,100 | 211,500 | 223,200 | 235,000 | 245,800 | 255,500 | 264,300 |
| Suwannee | 41,551 | 45,423 | 45,900 | 48,300 | 50,400 | 52,100 | 53,500 | 54,700 | 56,000 | 57,300 | 58,200 | 59,000 | 59,800 |
| Taylor | 22,570 | 22,458 | 22,600 | 23,200 | 23,600 | 24,000 | 24,300 | 24,700 | 24,900 | 25,200 | 25,500 | 25,900 | 26,200 |
| Union | 15,535 | 15,505 | 15,500 | 15,600 | 15,600 | 15,700 | 15,700 | 15,700 | 15,800 | 15,900 | 15,900 | 16,000 | 16,000 |
| Volusia | 494,593 | 538,763 | 545,200 | 573,800 | 595,800 | 613,600 | 629,700 | 644,700 | 670,400 | 692,400 | 714,400 | 736,300 | 763,900 |
| Wakulla | 30,776 | 32,976 | 33,300 | 35,400 | 37,200 | 38,500 | 39,600 | 40,600 | 41,800 | 43,000 | 43,900 | 44,900 | 45,600 |
| Walton | 55,043 | 70,071 | 72,100 | 81,500 | 89,600 | 96,200 | 102,200 | 107,700 | 114,000 | 119,800 | 125,300 | 130,300 | 134,900 |
| Washington | 24,896 | 25,387 | 25,200 | 25,900 | 26,500 | 27,000 | 27,300 | 27,700 | 28,200 | 28,700 | 29,200 | 29,700 | 30,200 |
| FLORIDA | 18,801,310 | 21,208,589 | 21,556,000 | 23,130,900 | 24,426,200 | 25,498,000 | 26,428,700 | 27,266,900 | 29,108,600 | 30,397,600 | 31,686,600 | 32,975,600 | 34,264,600 |

